

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



# RTD UPDATES: Integrated Pest Management

Data updates from the Resources and Technology Division

Economic Research Service  
U.S. Department of Agriculture

June 1994  
Number 2

## Pest Management Practices in Vegetable Production

- Overall, 74 percent of the vegetable planted acres in the surveyed States were scouted for insects, 73 percent for diseases, and 72 percent for weeds.
- Economic thresholds for insects were used on 71 percent of the scouted acres in the surveyed States, for diseases on 56 percent, and for weeds on 48 percent.
- Differences existed in the extent of adoption of pest management practices. Growers selected pesticides to protect beneficials (insects, mites, etc.) on 38 percent of the acres in the surveyed States but released purchased beneficials on only 3 percent.

This issue of RTD UPDATES summarizes information on the adoption of pest management practices in the production of vegetables. To practice integrated pest management (IPM), farmers need to scout their fields and use economic thresholds to determine pesticide treatment decisions. In addition to this management approach, farmers may also adopt other pest management practices such as biological controls (beneficial organisms, pheromones), cultural controls (water management, soil testing), and strategic controls (planting date). The tables included in this UPDATE contain State level summaries of the survey results related to scouting for pests, the most important factors influencing growers' decisions on when to apply pesticides, and the use of other pest management practices. The 1992 Vegetable Chemical Use Survey used

in this issue of RTD UPDATES targeted 20 commodities and 14 States, accounting for most of the U.S. acreage as detailed below:

Crop	Survey coverage	
	No. of States	Percent of U. S. acres
Asparagus	6	98
Broccoli	4	100
Cabbage	9	88
Carrots	10	93
Celery	5	99
Cucumbers	11	71
Green peas	9	92
Lettuce	7	97
Melons	6	80
Onions	9	77
Peppers	6	89
Snap beans	11	78
Spinach	4	78
Strawberries	9	93
Sweet corn	13	85
Tomatoes	9	87

Further information: Sharon Jans (202) 219-1022 or Jorge Fernandez-Cornejo (202) 219-0463.

### About RTD UPDATES

RTD UPDATES is a semimonthly series featuring data relating to agricultural resources, the environment, food safety, and technology. These UPDATES report recent data from surveys of farm operators and others knowledgeable about changing agricultural resource conditions, with only minimal interpretation or analysis. Please contact the individual listed at the end of the text for additional information about the data in this UPDATE. If you would like to be added to the mailing list or have other questions about RTD UPDATES, contact Richard Magleby, (202) 219-0436.

### Pest management practices

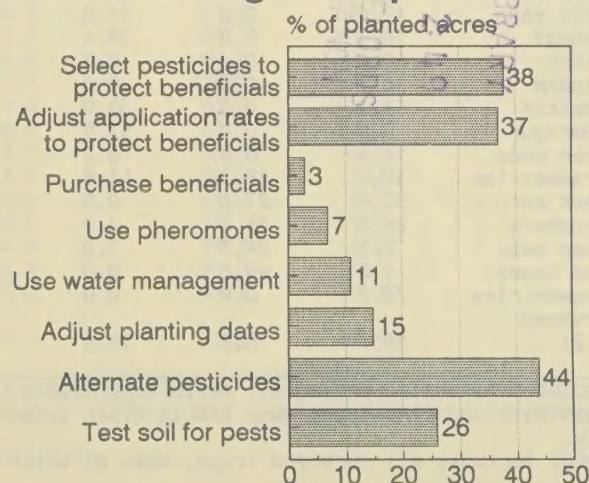




Table 1--Scouting for insects on vegetables, by State and crop, 1992

		Majority of scouting provided by						
State	Crop	Operator/ family member	Employee	Chemical dealer	Commercial scouting	Other 1/	Total scouted	Not scouted
Percent of planted acres								
AZ	Lettuce	0.0	0.0	0.0	76.7	0.0	76.7	23.3
CA	Asparagus	9.2	42.1	25.1	0.0	0.0	76.4	23.6
	Broccoli	0.0	0.0	40.8	59.2	0.0	100.0	0.0
	Cucumbers	78.0	0.0	0.0	0.0	0.0	78.0	22.0
	Lettuce	33.4	11.6	35.2	19.7	0.0	99.9	0.1
	Melons	3.4	0.0	63.4	28.6	0.0	95.4	4.6
	Peppers	16.8	40.9	1.0	24.5	0.0	83.2	16.8
	Strawberries	16.6	40.7	14.8	15.2	9.7	97.0	3.0
	Sweet corn	0.8	0.0	53.5	28.0	0.0	82.3	17.7
	Tomatoes	12.1	0.0	59.3	4.7	0.1	76.2	23.8
FL	Cabbage	19.2	0.0	0.0	0.0	0.0	19.2	80.8
	Cucumbers	79.8	0.0	0.0	12.9	0.0	92.7	7.3
	Melons	77.8	0.0	0.0	0.0	0.0	77.8	22.2
	Peppers	13.3	0.0	0.0	13.8	0.0	27.1	72.9
	Snap beans	58.4	0.0	0.0	0.0	0.0	58.4	41.6
	Strawberries	92.4	7.0	0.0	0.0	0.0	99.4	0.6
	Sweet corn	65.3	0.0	0.0	31.8	0.0	97.1	2.9
	Tomatoes	3.1	7.3	0.6	5.2	0.0	16.2	83.8
GA	Melons	16.3	0.0	0.0	0.0	0.0	16.3	83.7
	Onions	6.3	0.0	0.0	71.9	0.0	78.2	21.8
IL	Green Peas	0.0	0.0	0.0	0.0	100.0	100.0	0.0
	Snap beans	0.0	0.0	21.7	0.0	78.0	99.7	0.3
	Sweet corn	14.1	0.0	0.0	5.1	79.1	98.3	1.7
MI	Cucumbers	18.0	0.0	7.6	0.7	0.0	26.3	73.7
	Melons	20.4	0.0	57.2	0.0	0.0	77.6	22.4
	Strawberries	31.6	0.0	5.1	16.3	0.0	53.0	47.0
	Sweet corn	70.6	0.0	0.0	0.0	0.0	70.6	29.4
	Tomatoes	78.5	0.0	12.0	0.0	0.0	90.5	9.5
MN	Green peas	0.0	0.0	0.0	66.1	8.2	74.3	25.7
	Sweet corn	0.0	0.0	0.0	64.3	10.7	75.0	25.0
NJ	Cabbage	35.9	0.0	0.0	29.6	0.0	65.5	34.5
	Cucumbers	36.5	0.0	0.0	0.0	11.9	48.4	51.6
	Peppers	89.9	0.0	0.0	0.0	0.0	89.9	10.1
	Spinach	61.6	0.0	0.0	0.0	0.0	61.6	38.4
	Strawberries	73.5	0.0	0.0	3.7	3.4	80.6	19.4
	Sweet corn	35.6	0.0	0.0	17.4	16.5	69.5	30.5
	Tomatoes	78.4	0.0	0.0	3.6	0.0	82.0	18.0
NY	Cabbage	2.5	16.1	21.3	58.4	0.0	98.3	1.7
	Green peas	69.7	0.0	0.0	0.0	0.0	69.7	30.3
	Onions	30.4	9.9	22.2	13.1	11.0	86.6	13.4
	Sweet corn	18.1	0.4	2.4	66.0	3.2	90.1	9.9
	Tomatoes	88.4	0.0	0.0	0.0	0.0	88.4	11.6
NC	Cucumbers	46.4	0.0	27.2	4.0	0.0	77.6	22.4
	Melons	0.4	0.0	0.0	0.0	0.0	0.4	99.6
	Peppers	34.7	0.0	0.0	0.0	0.0	34.7	65.3
	Snap beans	100.0	0.0	0.0	0.0	0.0	100.0	0.0
	Strawberries	47.7	0.0	0.0	0.0	0.0	47.4	52.6
OR	Asparagus	43.5	0.0	0.0	0.0	0.0	43.5	56.5
	Cucumbers	0.0	0.0	46.1	0.0	34.9	81.0	19.0
	Green peas	0.1	0.0	15.6	0.0	23.5	39.2	60.8
	Snap beans	1.8	0.0	47.8	0.0	49.4	99.0	1.0
	Strawberries	40.5	0.0	22.6	2.1	0.0	65.2	34.8
	Sweet corn	17.6	0.0	11.0	12.9	23.3	64.8	35.2
TX	Cabbage	16.1	0.0	19.4	48.7	0.0	84.2	15.8
	Melons	40.7	0.0	0.0	5.8	0.0	46.5	53.5
	Spinach	6.2	0.0	0.0	34.6	59.2	100.0	0.0
	Tomatoes	13.1	0.0	30.9	0.0	0.0	44.0	56.0
WA	Asparagus	0.0	0.0	53.9	0.0	18.9	72.8	27.2
	Green peas	14.4	0.0	6.2	0.0	42.8	63.4	36.6
	Strawberries	30.9	13.5	41.8	0.0	0.0	86.2	13.8
	Sweet corn	53.6	27.8	0.0	0.0	16.6	98.0	2.0
WI	Cucumbers	28.8	15.3	0.0	0.0	0.0	44.1	55.9
	Green peas	2.3	24.3	0.0	4.6	24.6	55.8	44.2
	Snap beans	4.8	44.6	0.0	6.5	34.1	90.0	10.0
	Strawberries	78.2	0.0	0.0	7.0	0.0	85.2	14.8
All Surveyed crops 2/		18.7	6.5	18.5	20.5	9.5	73.7	26.3

1/ Includes extension personnel, field supervisors, grower associations, and others. The role of Extension has been to disseminate scouting techniques and to train growers and private consultants rather than provide scouting services directly.

2/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA



Table 2--Scouting for diseases on vegetables, by State and crop, 1992

		Majority of scouting provided by						
State	Crop	Operator/ family member	Employee	Chemical dealer	Commercial scouting	Other 1/	Total scouted	Not scouted
Percent of planted acres								
AZ	Lettuce	2.7	0.0	0.0	74.0	0.0	76.7	23.3
CA	Asparagus	9.2	42.1	25.1	0.0	0.0	76.4	23.6
	Broccoli	0.0	0.0	40.8	59.2	0.0	100.0	0.0
	Cucumbers	78.0	0.0	0.0	0.0	0.0	78.0	22.0
	Lettuce	3.4	11.6	65.2	19.7	0.0	99.9	0.1
	Melons	3.4	0.0	63.4	28.6	0.0	95.4	4.6
	Peppers	16.8	40.9	1.0	24.5	0.0	83.2	16.8
	Strawberries	18.9	38.4	14.8	15.2	9.7	97.0	3.0
	Sweet corn	0.8	0.0	53.5	28.0	0.0	82.3	17.7
	Tomatoes	38.7	0.0	32.8	4.7	0.1	76.3	23.7
FL	Cabbage	19.2	0.0	0.0	0.0	0.0	19.2	80.8
	Cucumbers	79.8	0.0	0.0	12.9	0.0	92.7	7.3
	Melons	77.8	0.0	0.0	0.0	0.0	77.8	22.2
	Peppers	13.3	0.0	0.0	13.8	0.0	27.1	72.9
	Snap beans	58.4	0.0	0.0	0.0	0.0	58.4	41.6
	Strawberries	92.4	7.0	0.0	0.0	0.0	99.4	0.6
	Sweet corn	65.3	0.0	0.0	31.8	0.0	97.1	2.9
	Tomatoes	3.1	7.3	1.1	5.2	0.0	16.7	83.3
GA	Melons	16.3	0.0	0.0	0.0	0.0	16.0	83.7
	Onions	6.3	0.0	0.0	71.9	0.0	78.2	21.8
IL	Green peas	0.0	0.0	0.0	0.0	100.0	100.0	0.0
	Snap beans	0.0	0.0	21.7	0.0	78.0	99.7	0.3
	Sweet corn	14.0	0.0	0.5	5.1	79.1	98.7	1.3
MI	Cucumbers	18.0	0.0	7.6	0.7	0.0	26.3	73.7
	Melons	20.4	0.0	57.2	0.0	0.0	77.6	22.4
	Strawberries	31.6	0.0	5.1	16.3	0.0	53.0	47.0
	Sweet corn	69.8	0.0	0.0	0.0	0.0	69.8	30.2
	Tomatoes	87.3	0.0	3.2	0.0	0.0	90.5	9.5
MN	Green peas	0.0	0.0	0.0	66.1	8.2	74.3	25.7
	Sweet corn	0.0	0.0	0.0	64.3	10.7	75.0	25.0
NJ	Cabbage	35.9	0.0	0.0	0.0	0.0	35.9	64.1
	Cucumbers	36.5	0.0	0.0	0.0	11.9	48.4	51.6
	Peppers	88.0	0.0	0.0	0.0	1.9	89.9	10.1
	Spinach	61.6	0.0	0.0	0.0	0.0	61.6	38.4
	Strawberries	57.6	0.0	0.0	3.7	3.4	64.7	35.3
	Sweet corn	60.4	0.0	0.0	4.3	2.4	67.1	32.9
	Tomatoes	77.8	0.0	0.0	0.0	0.0	77.8	22.2
NY	Cabbage	17.1	16.1	6.7	58.4	0.0	98.3	1.7
	Green peas	69.7	0.0	0.0	0.0	0.0	69.7	30.3
	Onions	30.4	9.9	22.2	13.1	11.0	86.6	13.4
	Sweet corn	18.1	0.4	0.0	68.5	3.2	90.2	9.8
	Tomatoes	88.4	0.0	0.0	0.0	0.0	88.4	11.6
NC	Cucumbers	50.3	0.0	27.2	0.0	0.0	77.5	22.5
	Melons	0.4	0.0	0.0	0.0	0.0	0.4	99.6
	Peppers	34.7	0.0	0.0	0.0	0.0	34.7	65.3
	Snap beans	100.0	0.0	0.0	0.0	0.0	100.0	0.0
	Strawberries	47.4	0.0	0.0	0.0	0.0	47.4	52.6
OR	Asparagus	17.5	0.0	26.1	0.0	0.0	43.6	56.4
	Cucumbers	0.0	0.0	46.1	0.0	34.9	81.0	19.0
	Green peas	0.1	0.0	15.6	0.0	9.1	24.8	75.2
	Snap beans	1.8	0.0	33.9	0.0	63.4	99.1	0.9
	Strawberries	40.1	0.0	22.6	2.1	0.0	64.8	35.2
	Sweet corn	16.6	0.0	9.0	12.9	23.3	61.8	38.2
TX	Cabbage	16.1	0.0	19.4	48.7	0.0	84.2	15.8
	Melons	40.7	0.0	0.0	5.8	0.0	46.5	53.5
	Spinach	6.2	0.0	0.0	34.6	59.2	100.0	0.0
	Tomatoes	13.1	0.0	30.9	0.0	0.0	44.0	56.0
WA	Asparagus	0.0	0.0	53.9	0.0	18.9	72.8	27.2
	Green peas	14.4	0.0	6.2	0.0	42.8	63.4	36.6
	Strawberries	29.1	13.5	41.8	0.0	1.8	86.2	13.8
	Sweet corn	53.6	27.8	0.0	0.0	16.6	98.0	2.0
WI	Cucumbers	28.8	15.3	0.0	0.0	0.0	44.1	55.9
	Green peas	2.3	24.3	0.0	4.6	24.6	55.8	44.2
	Snap beans	4.8	44.6	0.0	6.5	34.1	90.0	10.0
	Strawberries	85.2	0.0	0.0	0.0	0.0	85.2	14.8
All Surveyed crops 2/		20.0	6.5	16.1	20.3	10.1	73.0	27.0

1/ Includes extension personnel, field supervisors, grower associations, and others. The role of Extension has been to disseminate scouting techniques and to train growers and private consultants rather than provide scouting services directly.

2/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA



Table 3--Scouting for weeds on vegetables, by State and crop, 1992

Majority of scouting provided by								
State	Crop	Operator/ family member	Employee	Chemical dealer	Commercial scouting	Other 1/	Total scouted	Not scouted
Percent of planted acres								
AZ	Lettuce	52.0	0.0	0.0	24.7	0.0	76.7	23.3
CA	Asparagus	14.1	42.1	20.2	0.0	0.0	76.4	23.6
	Broccoli	3.3	32.8	4.7	59.2	0.0	100.0	0.0
	Cucumbers	78.0	0.0	0.0	0.0	0.0	78.0	22.0
	Lettuce	45.3	27.2	27.4	0.0	0.0	99.9	0.1
	Melons	12.3	0.0	54.5	28.6	0.0	95.4	4.6
	Peppers	16.8	40.9	1.0	24.5	0.0	83.2	16.8
	Strawberries	45.3	41.5	7.1	2.9	0.0	96.8	3.2
	Sweet corn	0.8	0.0	53.5	28.0	0.0	82.3	17.7
	Tomatoes	42.5	0.0	29.6	4.0	0.0	76.1	23.9
FL	Cabbage	19.2	0.0	0.0	0.0	0.0	19.2	80.8
	Cucumbers	79.8	0.0	0.0	12.9	0.0	92.7	7.3
	Melons	77.8	0.0	0.0	0.0	0.0	77.8	22.2
	Peppers	13.3	0.0	0.0	13.8	0.0	27.1	72.9
	Snap beans	4.6	0.0	0.0	0.0	0.0	4.6	95.4
	Strawberries	92.4	7.0	0.0	0.0	0.0	99.4	0.6
	Sweet corn	65.3	31.8	0.0	0.0	0.0	97.1	2.9
	Tomatoes	3.1	7.3	0.6	5.2	0.0	16.2	83.8
GA	Melons	16.2	0.0	0.0	0.0	0.0	16.2	83.8
	Onions	55.5	16.1	0.0	6.5	0.0	78.1	21.9
IL	Green peas	0.0	0.0	0.0	0.0	59.8	59.8	40.2
	Snap beans	59.9	0.0	21.7	0.0	18.1	99.7	0.3
	Sweet corn	30.7	0.0	0.5	5.1	48.7	85.0	15.0
MI	Cucumbers	18.0	0.0	7.6	0.7	0.0	26.3	73.7
	Melons	20.4	0.0	0.0	0.0	0.0	20.4	79.6
	Snap Beans	17.7	0.0	0.0	0.0	0.0	17.7	82.3
	Strawberries	31.6	0.0	5.1	16.3	0.0	53.0	47.0
	Sweet corn	70.6	0.0	0.0	0.0	0.0	70.6	29.4
	Tomatoes	87.3	0.0	3.2	0.0	0.0	90.5	9.5
MN	Green peas	3.7	0.0	0.0	59.5	8.2	71.4	28.6
	Sweet corn	30.5	0.0	0.0	38.5	5.9	74.9	25.1
NJ	Cabbage	35.9	0.0	0.0	0.0	0.0	35.9	64.1
	Cucumbers	48.4	0.0	0.0	0.0	0.0	48.4	51.6
	Peppers	89.9	0.0	0.0	0.0	0.0	89.9	10.1
	Spinach	61.6	0.0	0.0	0.0	0.0	61.6	38.4
	Strawberries	61.4	0.0	0.0	0.0	3.4	64.8	35.2
	Sweet corn	60.4	0.0	0.0	0.0	2.4	62.8	37.2
	Tomatoes	77.8	0.0	0.0	0.0	0.0	77.8	22.2
NY	Cabbage	17.1	16.1	6.7	58.4	0.0	98.3	1.7
	Green peas	69.7	0.0	0.0	0.0	0.0	69.7	30.3
	Onions	30.4	9.9	22.2	13.1	11.0	86.6	13.4
	Sweet corn	83.2	0.4	0.0	2.6	2.7	88.9	11.1
	Tomatoes	87.5	0.0	0.0	0.0	0.0	87.5	12.5
NC	Cucumbers	50.3	0.0	27.2	0.0	0.0	77.5	22.5
	Melons	0.4	0.0	0.0	0.0	0.0	0.4	99.6
	Peppers	34.7	0.0	0.0	0.0	0.0	34.7	65.3
	Snap beans	100.0	0.0	0.0	0.0	0.0	100.0	0.0
	Strawberries	47.4	0.0	0.0	0.0	0.0	47.4	52.6
OR	Asparagus	17.5	0.0	26.1	0.0	0.0	43.6	56.4
	Cucumbers	0.0	0.0	46.1	0.0	34.9	81.0	19.0
	Green peas	0.1	0.0	30.0	0.0	9.1	39.2	60.8
	Snap beans	24.7	0.0	24.9	0.0	49.4	99.0	1.0
	Strawberries	56.3	0.0	8.7	0.2	0.0	65.2	34.8
	Sweet corn	35.5	0.0	4.7	0.0	21.6	61.8	38.2
TX	Cabbage	84.2	0.0	0.0	0.0	0.0	84.2	15.8
	Melons	46.5	0.0	0.0	0.0	0.0	46.5	53.5
	Spinach	6.2	0.0	0.0	34.6	59.2	100.0	0.0
	Tomatoes	44.1	0.0	0.0	0.0	0.0	44.1	55.9
WA	Asparagus	31.5	0.0	22.4	0.0	18.9	72.8	27.2
	Green peas	14.4	0.0	6.2	0.0	42.8	63.4	36.6
	Strawberries	30.9	13.5	41.8	0.0	0.0	86.2	13.8
	Sweet corn	53.6	27.8	0.0	0.0	16.6	98.0	2.0
WI	Cucumbers	28.8	15.3	0.0	0.0	0.0	44.1	55.9
	Green peas	2.3	24.3	0.0	4.6	24.6	55.8	44.2
	Snap beans	37.0	44.6	0.0	6.5	1.9	90.0	10.0
	Strawberries	85.2	0.0	0.0	0.0	0.0	85.2	14.8
All Surveyed crops 2/		33.9	11.1	9.7	10.6	6.8	72.1	27.9

1/ Includes extension personnel, field supervisors, grower associations, and others. The role of Extension has been to disseminate scouting techniques and to train growers and private consultants rather than provide scouting services directly.

2/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA



Table 4--Insecticide and fungicide application decision criteria on vegetables, by State and crop, 1992

		Insecticides decision criteria					Fungicides decision criteria				
State	Crop	Routine schedule	As needed (economic threshold)	Contract require- ments	Other	Did not apply	Routine schedule	As needed (economic threshold)	Contract require- ments	Other	Did not apply
Percent of scouted acres											
AZ	Lettuce	0.0	96.5	0.0	3.5	0.0	0.0	96.5	0.0	0.0	3.5
CA	Broccoli	32.8	63.3	3.9	0.0	0.0	32.8	63.3	3.9	0.0	0.0
	Carrots	4.8	92.4	0.0	0.0	2.8	4.8	94.7	0.0	0.0	0.5
	Lettuce	12.5	85.6	0.0	1.9	0.0	12.9	83.9	0.0	0.0	3.2
	Melons	0.0	95.4	0.0	0.0	4.6	0.0	86.1	0.0	0.0	13.9
	Peppers	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	Strawberries	27.3	68.2	1.6	0.0	2.9	35.2	63.3	0.4	0.0	1.1
	Tomatoes	0.0	100.0	0.0	0.0	0.0	4.1	58.6	0.0	0.0	37.2
FL	Cucumbers	2.4	97.6	0.0	0.0	0.0	2.4	97.6	0.0	0.0	0.0
	Melons	29.7	33.3	0.0	0.0	37.0	50.1	49.9	0.0	0.0	0.0
	Peppers	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	Strawberries	8.6	91.4	0.0	0.0	0.0	12.2	87.8	0.0	0.0	0.0
	Sweet corn	0.6	98.5	0.0	0.0	0.9	0.6	98.5	0.0	0.0	0.9
	Tomatoes	19.1	80.3	0.7	0.0	0.0	22.9	76.4	0.7	0.0	0.0
IL	Green peas	0.0	0.0	91.9	0.0	8.1	0.0	0.0	10.8	0.0	89.2
	Snap beans	0.0	81.8	18.2	0.0	0.0	0.0	81.8	10.5	7.6	0.0
	Sweet corn	16.5	7.4	58.0	0.8	17.3	0.0	0.8	10.8	0.0	88.4
MI	Cabbage	3.4	96.6	0.0	0.0	0.0	3.4	44.0	0.0	0.0	52.6
	Celery	32.4	67.6	0.0	0.0	0.0	37.6	62.4	0.0	0.0	0.0
	Cucumbers	7.7	92.3	0.0	0.0	0.0	7.7	83.4	0.0	0.0	9.0
	Snap beans	1.1	98.9	0.0	0.0	0.0	0.2	1.5	0.0	0.0	98.3
	Strawberries	13.2	80.1	0.0	0.0	6.8	28.3	54.1	0.0	0.0	17.7
	Sweet corn	7.3	92.6	0.0	0.0	0.0	5.9	71.0	0.0	0.0	23.1
	Tomatoes	0.6	99.4	0.0	0.0	0.0	0.7	99.3	0.0	0.0	0.1
MN	Green peas	0.0	23.6	41.3	1.7	33.5	0.0	2.9	31.2	0.0	66.0
	Sweet corn	10.3	6.3	69.5	11.5	2.4	0.0	0.0	26.4	11.5	62.1
NJ	Cabbage	0.0	100.0	0.0	0.0	0.0	0.0	99.5	0.0	0.0	0.5
	Cucumbers	7.5	92.5	0.0	0.0	0.0	59.6	40.4	0.0	0.0	0.0
	Peppers	0.0	84.7	0.0	0.0	15.3	42.7	54.6	0.0	0.0	2.7
	Spinach	0.0	5.7	51.5	0.0	42.8	9.9	5.7	51.5	0.0	33.0
	Strawberries	4.2	68.8	0.0	0.0	27.0	45.7	25.8	0.0	0.0	28.6
	Sweet corn	16.9	56.5	6.2	14.5	6.0	21.8	41.8	0.0	3.5	32.8
	Tomatoes	1.2	93.8	0.0	0.0	5.0	36.1	55.1	0.0	0.0	8.7
NY	Cabbage	0.0	40.6	0.0	59.4	0.0	16.4	23.5	0.0	59.4	0.7
	Onions	34.1	65.9	0.0	0.0	0.0	45.5	54.5	0.0	0.0	0.0
	Strawberries	3.6	95.1	0.4	1.0	0.0	3.6	94.3	0.4	1.0	0.7
	Sweet corn	0.7	98.8	0.0	0.2	0.4	2.4	81.8	0.0	0.2	15.6
	Tomatoes	0.0	87.7	0.0	0.0	12.3	11.2	80.1	0.0	7.7	1.0
NC	Cabbage	96.0	4.0	0.0	0.0	0.0	96.0	4.0	0.0	0.0	0.0
	Cucumbers	1.5	51.6	0.0	0.0	46.9	46.9	53.1	0.0	0.0	0.0
	Strawberries	1.9	82.4	0.0	0.0	15.7	15.7	45.8	0.0	0.0	38.5
	Tomatoes	86.8	13.2	0.0	0.0	0.0	86.8	13.0	0.0	0.0	0.2
OR	Snap beans	38.6	59.7	0.0	0.0	1.7	43.4	54.8	0.0	0.0	1.8
	Strawberries	11.7	73.1	13.8	0.6	0.9	49.6	35.4	13.8	0.0	1.2
	Sweet corn	15.4	66.9	17.0	0.0	0.7	19.9	31.4	0.0	0.0	48.7
TX	Cabbage	96.0	4.0	0.0	0.0	0.0	96.0	4.0	0.0	0.0	0.0
	Melons	2.5	85.6	0.0	0.0	11.8	12.4	75.7	0.0	0.0	11.8
	Spinach	0.0	40.8	59.2	0.0	0.0	0.0	40.8	59.2	0.0	0.0
WA	Asparagus	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	Green peas	18.8	81.2	0.0	0.0	0.0	9.7	81.2	0.0	0.0	9.0
	Strawberries	53.3	37.7	0.0	0.0	9.1	77.5	20.9	0.0	0.0	1.7
	Sweet corn	28.4	27.0	44.5	0.0	0.1	0.0	27.0	6.3	0.0	66.7
WI	Snap beans	4.5	67.5	26.1	0.0	1.9	10.0	0.0	34.5	0.0	55.5
	Strawberries	7.9	91.0	0.0	0.0	1.2	16.8	81.4	0.0	0.0	1.9
All Surveyed crops 1/		9.3	70.6	10.6	1.4	8.2	10.0	56.2	5.0	1.7	27.1

1/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA

Table 5--Herbicide application decision criteria on vegetables, by State and crop, 1992

State	Crop	Routine schedule	As needed (economic threshold)	Contract requirements	Other	Did not apply
Percent of scouted acres						
AZ	Lettuce	3.5	96.5	0.0	0.0	0.0
CA	Broccoli	36.2	56.6	3.9	3.3	0.0
	Carrots	62.5	37.5	0.0	0.0	0.0
	Lettuce	69.0	29.9	0.0	0.0	1.1
	Melons	0.0	95.4	0.0	0.0	4.6
	Peppers	49.1	50.9	0.0	0.0	0.0
	Strawberries	36.6	42.8	0.4	0.0	20.2
	Tomatoes	81.9	13.9	0.0	0.0	4.1
FL	Cucumbers	0.0	97.6	0.0	0.0	2.4
	Melons	29.3	25.5	0.0	0.0	45.3
	Peppers	0.0	100.0	0.0	0.0	0.0
	Strawberries	0.7	99.3	0.0	0.0	0.0
	Sweet corn	0.0	98.5	0.0	0.0	1.5
	Tomatoes	35.8	63.1	0.0	0.0	1.1
IL	Green peas	29.8	48.9	0.0	0.0	21.3
	Snap beans	81.8	0.0	18.2	0.0	0.0
	Sweet corn	47.4	11.8	40.0	0.8	0.0
MI	Cabbage	45.1	2.3	0.0	0.0	52.6
	Celery	32.4	67.6	0.0	0.0	0.0
	Cucumbers	42.3	48.7	0.0	0.0	9.0
	Snap beans	0.0	98.7	0.0	0.0	1.3
	Strawberries	40.4	51.5	0.0	0.0	8.1
	Sweet corn	57.5	38.0	0.0	0.0	4.6
	Tomatoes	10.3	89.4	0.0	0.0	0.3
MN	Green peas	40.5	33.0	26.5	0.0	0.0
	Sweet corn	34.2	45.5	17.9	0.0	2.4
NJ	Cabbage	54.3	0.5	0.0	0.0	45.2
	Cucumbers	52.1	13.5	0.0	0.0	34.4
	Peppers	57.1	42.9	0.0	0.0	0.0
	Spinach	61.4	36.6	0.0	0.0	2.1
	Strawberries	0.0	90.7	0.0	0.0	9.3
	Sweet corn	64.3	22.8	0.0	3.5	9.4
	Tomatoes	36.8	49.1	0.0	0.0	14.1
NY	Cabbage	39.9	0.0	0.0	59.4	0.7
	Onions	54.7	45.3	0.0	0.0	0.0
	Strawberries	6.5	93.2	0.4	0.0	0.0
	Sweet corn	86.0	13.6	0.0	0.2	0.1
	Tomatoes	18.9	64.7	0.0	7.7	8.7
NC	Cabbage	96.0	4.0	0.0	0.0	0.0
	Cucumbers	54.7	45.3	0.0	0.0	0.0
	Strawberries	35.4	48.6	0.0	1.1	14.9
	Tomatoes	86.8	13.0	0.0	0.0	0.2
OR	Snap beans	63.2	36.8	0.0	0.0	0.0
	Strawberries	49.4	36.5	13.8	0.0	0.3
	Sweet corn	37.4	42.3	17.0	1.4	1.9
TX	Cabbage	0.0	100.0	0.0	0.0	0.0
	Melons	75.8	12.4	0.0	0.0	11.8
	Spinach	0.0	40.8	59.2	0.0	0.0
WA	Asparagus	0.0	100.0	0.0	0.0	0.0
	Green peas	9.7	81.2	0.0	9.0	0.0
	Strawberries	53.3	37.7	0.0	0.0	9.1
	Sweet corn	0.0	99.9	0.0	0.0	0.1
WI	Snap beans	65.8	4.1	30.2	0.0	0.0
	Strawberries	6.1	93.4	0.0	0.0	0.5
All Surveyed crops 1/		42.6	47.7	5.4	0.7	3.7

1/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA



Table 6--Use of pest management practices on vegetables, by State and crop, 1992

State	Crop	Adjust pesticide selection to protect beneficials	Adjust application rates to protect beneficials	Purchase beneficials	Use pheromones	Use water management	Adjust planting dates	Alternate pesticides used	Test soil for pests
Percent of planted acres									
AZ	Lettuce	27.4	27.4	0.0	2.7	0.0	26.0	75.3	0.0
CA	Asparagus	25.1	4.9	0.0	4.9	20.2	4.9	25.1	4.9
	Broccoli	66.7	66.7	3.9	0.0	55.3	2.9	62.9	62.5
	Cucumbers	0.0	0.0	0.0	0.0	0.0	13.1	22.0	13.1
	Lettuce	36.0	16.0	3.6	0.0	5.5	25.8	47.8	51.0
	Melons	73.8	79.2	21.0	0.0	45.3	8.9	30.5	21.6
	Peppers	83.2	58.7	16.8	0.0	40.9	0.0	0.0	0.0
	Strawberries	86.6	78.7	71.0	4.7	2.0	11.1	82.7	43.6
	Sweet corn	32.3	60.7	4.1	53.2	0.0	0.3	56.2	0.0
	Tomatoes	43.2	45.4	6.5	6.0	25.6	58.1	24.1	49.6
FL	Cabbage	88.1	88.1	0.0	68.9	0.0	0.0	100.0	80.8
	Cucumbers	28.9	12.1	0.0	12.9	12.9	16.8	87.9	62.9
	Melons	57.6	57.6	0.0	0.0	9.3	4.3	60.5	0.0
	Peppers	21.3	47.5	0.0	25.0	0.0	13.8	61.7	0.0
	Snap beans	100.0	55.2	0.0	0.0	0.0	0.0	97.0	53.8
	Strawberries	43.3	32.5	0.0	0.0	8.8	0.8	81.1	39.0
	Sweet corn	95.4	95.4	0.0	63.6	0.0	2.9	96.2	49.5
	Tomatoes	5.3	7.0	0.2	0.9	1.7	0.2	12.6	4.0
GA	Melons	53.7	40.1	0.0	0.0	0.0	0.0	21.4	16.7
	Onions	49.3	3.3	0.0	4.0	0.0	56.3	26.4	86.9
IL	Green peas	48.9	0.0	0.0	0.0	0.0	48.9	70.6	48.9
	Snap beans	0.0	0.3	0.0	0.0	0.0	0.0	59.9	0.0
	Sweet corn	12.8	2.9	0.0	0.0	0.0	1.1	31.7	0.0
MI	Cucumbers	43.6	55.6	0.0	0.0	0.0	3.8	40.3	0.0
	Melons	16.0	15.8	0.0	0.0	0.0	0.0	73.0	0.0
	Strawberries	30.8	29.8	2.0	18.4	9.4	2.6	47.4	13.6
	Sweet corn	47.5	45.1	0.0	24.7	1.4	17.9	69.7	1.9
	Tomatoes	89.8	89.8	0.0	34.9	34.4	24.3	96.1	81.9
MN	Green peas	0.0	0.0	0.0	0.0	0.0	0.0	10.8	13.0
	Sweet corn	3.8	4.5	0.0	0.0	0.0	3.5	19.8	8.6
NJ	Cabbage	10.9	40.2	0.0	29.6	0.0	0.0	65.3	0.0
	Cucumbers	19.5	41.8	0.0	0.0	14.0	21.8	89.2	29.7
	Peppers	25.2	46.9	0.0	0.0	15.7	1.9	77.5	0.0
	Spinach	19.0	22.5	0.0	0.0	0.0	0.3	96.2	0.3
	Strawberries	52.9	10.9	33.5	10.6	0.0	35.1	58.8	38.7
	Sweet corn	20.1	36.1	0.0	16.6	0.0	4.8	62.9	16.7
	Tomatoes	32.0	38.1	0.5	4.1	1.2	22.4	79.2	6.6
NY	Cabbage	23.5	22.8	0.0	0.0	0.0	0.0	37.4	1.8
	Green peas	0.0	0.0	0.0	0.0	0.0	41.0	28.7	0.0
	Onions	52.5	21.9	0.0	9.9	0.0	0.0	77.2	4.7
	Sweet corn	10.5	14.3	0.0	0.6	0.0	4.0	30.0	0.6
	Tomatoes	6.0	22.2	0.0	0.0	0.0	12.7	21.8	0.0
NC	Cucumbers	11.1	3.7	0.0	0.0	0.0	27.2	78.9	78.0
	Melons	5.0	4.6	0.0	0.0	0.4	1.6	5.2	28.1
	Peppers	0.0	0.0	0.0	0.0	0.0	0.0	34.7	0.0
	Snap beans	0.0	0.0	0.0	0.0	0.0	27.6	27.6	100.0
	Strawberries	21.3	14.2	0.0	0.8	6.2	7.5	35.4	26.8
OR	Asparagus	21.7	29.0	0.0	0.0	0.0	0.0	65.3	0.0
	Cucumbers	99.0	34.9	0.0	0.0	0.0	1.0	0.0	17.9
	Green peas	30.0	15.6	0.0	0.0	0.1	0.1	9.1	0.0
	Snap beans	7.4	8.6	0.0	0.0	11.5	4.7	64.1	46.8
	Strawberries	49.7	64.6	6.0	23.2	4.8	9.6	83.4	72.7
	Sweet corn	30.4	29.7	0.0	14.7	1.9	0.0	21.2	14.1
TX	Cabbage	48.7	64.8	0.0	0.0	0.0	35.5	100.0	0.0
	Melons	49.6	45.6	0.0	0.0	0.0	52.3	45.6	0.0
	Spinach	100.0	100.0	0.0	0.0	0.0	34.6	93.8	0.0
	Tomatoes	0.0	15.5	0.0	0.0	0.0	38.3	38.4	0.0
WA	Asparagus	55.9	81.1	0.0	0.0	33.5	0.0	100.0	56.7
	Green peas	19.6	9.2	0.0	0.0	0.0	0.0	17.5	5.9
	Strawberries	37.5	22.8	0.0	22.1	0.0	0.8	84.9	76.7
	Sweet corn	47.8	16.2	0.0	81.8	0.0	0.0	81.8	16.2
WI	Cucumbers	15.3	15.3	0.0	28.8	0.0	0.0	0.0	28.8
	Green peas	28.9	41.5	0.0	0.0	5.8	6.9	4.6	0.0
	Snap beans	7.5	48.3	0.0	0.0	0.0	0.0	19.2	3.8
	Strawberries	60.9	37.0	0.9	0.0	4.1	2.9	81.9	46.0
All Surveyed crops 1/		38.4	36.5	3.4	6.5	10.7	14.8	43.5	25.5

1/ Total includes all surveyed crops, some of which are not listed in the table.

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA

Table 7--Pest management practices on vegetables, by crop, 1992

Crop	Adjust Pesticide selection to protect beneficials	Adjust application rates to protect beneficials	Purchase beneficials	Use pheromones	Use water management	Adjust planting dates	Alternate pesticides used	Test soil for pests
Percent of planted acres								
Asparagus	40.5	40.1	0.0	2.3	29.9	2.3	55.3	20.0
Broccoli	63.3	62.2	3.6	0.0	51.5	2.8	61.5	58.3
Cabbage	61.9	59.7	0.0	13.7	1.4	4.3	79.0	28.5
Carrots	75.5	23.1	0.0	18.1	3.0	19.8	45.3	36.3
Celery	88.7	84.7	0.0	12.0	0.0	0.0	98.5	79.7
Cucumbers	31.7	21.6	0.0	3.9	2.7	18.9	58.6	44.7
Green peas	19.8	16.2	0.0	0.0	2.4	6.6	15.6	8.8
Lettuce	34.1	19.3	2.7	0.6	4.1	26.2	54.2	38.8
Melons	62.1	61.1	14.5	0.0	18.0	15.1	41.3	18.3
Onions	26.1	10.9	0.0	6.6	6.6	4.1	34.8	22.1
Peppers	41.0	43.0	5.7	8.8	15.2	4.6	33.0	0.0
Snap beans	27.5	35.8	0.3	3.0	1.2	1.9	46.7	19.7
Spinach	90.5	90.9	0.0	0.0	0.0	14.3	97.0	46.9
Strawberries	68.3	63.2	37.2	7.3	3.5	9.1	78.9	43.1
Sweet corn	26.0	35.5	0.1	16.6	6.6	7.5	47.9	15.2
Tomatoes	38.3	40.8	5.2	5.8	21.2	47.4	26.1	41.8
All surveyed crops	38.4	36.5	3.4	6.5	10.7	14.8	43.5	25.5

Source: 1992 Vegetable Chemical Use Survey, Economic Research Service and National Agricultural Statistics Service, USDA

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotope, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, DC 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

#### RTD UPDATES

Economic Research Service  
U.S. Department of Agriculture  
1301 New York Avenue, N.W., Room 524  
Washington, DC 20005-4788

FIRST CLASS  
POSTAGE & FEES PAID  
USDA  
PERMIT NO. G-145